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Liebherr-Aerospace Lindenberg GmbH
D-88153 Lindenberg, Germany

Condenser

Patent Claims

1. Condenser for an air-based climate control system, having an inlet and an outlet for the air to be cooled, an inlet and an outlet for the cool air, a heat exchange unit for heat transfer between the air to be cooled and the cool air, a bypass that circumvents the cool-air side of the heat exchange unit at least within a certain area, and a hot-air inlet on the cool-air side by means of which hot air can be fed into the condenser,

characterized in that

the hot-air inlet is positioned in such a way that the hot air essentially flows in a partial area on the cool-air side of the condenser inlet and that the bypass inlet is positioned in the partial area downstream of the hot-air inlet.

2. Condenser according to Claim 1, characterized in that the bypass is positioned in the edge area of the condenser or in the center or in an area between these positions.

3. Condenser according to Claim 1 or 2, characterized in that the bypass is an integral component of the condenser.

4. Condenser according to one of Claims 1 to 3, characterized in that the hot-air inlet and the bypass inlet are oriented toward one another in such a way that the hot-air stream is fed entirely through the bypass.

5. Condenser according to one of Claims 1 to 3, characterized in that the hot-air inlet and the bypass inlet are oriented toward one another in such a way that the hot-air stream is fed predominantly through the bypass.

6. Condenser according to one of Claims 1 to 5, characterized in that the bypass is positioned in the edge area of the heat exchange unit and that an area, through which the air to be cooled can flow, is positioned between the outer wall of the heat exchange unit and the wall of the bypass.

7. Condenser according to one of Claims 1 to 6, characterized in that two or more bypasses are provided that are each positioned in the edge area of the condenser.

8. Condenser according to one of Claims 1 to 7, characterized in that one or more than one valve is provided, by means of which the volume flow of the hot air fed to the bypass or bypasses can be modified.

9. Condenser according to Claim 8, characterized in that the valve or valves are integrated into the heat exchange unit.

10. Condenser according to one of Claims 1 to 9, characterized in that a water eliminator is provided that is integrated into the outlet of the cool air or of the air to be cooled.

11. Condenser according to one of Claims 1 to 10, characterized in that the heat exchange unit is designed in any desired manner, in particular as a crossflow, counterflow, or uniflow heat exchanger.

12. Air-based climate control system, especially for aircraft, having at least one turbine for decompression and cooling of air to be fed into the passenger cabin and having a condenser with a heat exchange unit, the inlet of which on the cool-air side is connected with the turbine outlet, and having an admixture conduit by means of which hot air can be mixed into the air to be fed into the passenger cabin,

characterized in that

the admixture conduit feeds in downstream of the inlet on the cool-air side of the heat exchange unit.

13. Climate control system according to Claim 12, characterized in that the admixture conduit feeds into the outlet area of the heat exchange unit in the condenser.

14. Climate control system according to Claims 12 or 13, characterized in that a ram air canal is provided in which one or more heat exchangers are positioned,

through the cold air side of which ram air or ambient air flows, and the hot-air side of which is connected with a hot-air conduit that is connected with the admixture conduit in such a way that the admixture conduit is supplied with hot air from the hot-air conduit.

15. Climate control system according to one of Claims 12 to 14, characterized in that the condenser is designed according to one of Claims 1 to 11 and the admixture conduit is formed by the bypass of the condenser.